



Southmoreland School District Programming for the Arduino Curriculum Overview

Programming for the Arduino Overview:

This course provides students with fundamental knowledge of computer programming for solving applied and electronics-related problems. Students learn how a computer works through structured programming and software development while interfacing electronics and sensors using Arduino controllers. The topics include programming constructs, data types and declaration of variables, expressions and operators, selection statements, repetition, flowcharts for algorithm development, functions for modular programming, arrays for statistical data analysis, plotting for visualizing data, processing data files and robotics applications. Students learn how to program Arduino with a user-friendly programming language and Arduino IDE. Students also learn the basics of electronics and how Arduino responds to sensors using enlightening examples. Then, students design and build more fun prototypes based on their imagination.

Module Titles:

Module 1: Begin Programming with the Hummingbird

Module 2: Moving Masterpiece

Module 3: Components of the Arduino

Module Overviews:

Module 1: Begin Programming with the Hummingbird

In this module, students will learn how to use hummingbird outputs, the lights and motors. These components are called outputs because programs in Snap! Send commands to them to make something happen. Next, you will learn how to use the Hummingbird inputs, the sensors that provide information to the robot about its environment. They will read, analyze, and determine the proper way of creating a simple Snap program. Finally, they will apply their knowledge by creating a program with at least two blinks, run a motor, sensor and make a noise.

Module 2: Moving Masterpiece using the Hummingbird

In this module, students will learn all components of the hummingbird. They will read, analyze, and determine what input and outputs they will use to create their moving masterpiece. Finally, they will apply their knowledge by creating a moving masterpiece out of cardboard, foam, clay, paint and any other materials needed then they will program it to move and create a video to defend their creation.



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Module 3: Components of the Arduino

In this module, students will learn the difference between Arduino and the breadboard and how they work together. They will read, analyze, and determine the difference between the positives and negatives on the Arduino and breadboard, understand inputs and outputs and know that they can be digital or analog. Finally, they will apply their knowledge by creating a blinking LED, controlling LED with a button, controlling with PWM and Potentiometer.